

What is claimed is:

1. Metal nano-particles characterized in that an organic metal compound is adhered to the periphery of each metal particle as a dispersant.
2. The metal nano-particles as set forth in claim 1, wherein the organic metal compound
5 comprises at least one metal selected from the group consisting of precious metals and transition metals or it comprises an alloy of at least two metals selected from the foregoing group of metals.
3. The metal nano-particles as set forth in claim 1 or 2, wherein the organic metal compound is an organic metal compound of a fatty acid, a metal complex of an amine or a
10 mixture of an organic metal compound of a fatty acid and a metal complex of the amine.
4. The metal nano-particles as set forth in claim 3, wherein the fatty acid is at least one member selected from the group consisting of C₆ to C₂₂ saturated fatty acids and unsaturated fatty acids, each having a linear or branched structure.
5. The metal nano-particles as set forth in claim 4, wherein the fatty acid is at least one fatty
15 acid selected from the group consisting of hexanoic acid, heptanoic acid, octanoic acid, nonanoic acid, decanoic acid, undecanoic acid, dodecanoic acid, tetra-decanoic acid, eicosanoic acid, docosanoic acid, 2-ethyl hexanoic acid, oleic acid, linoleic acid and linolenic acid.
6. The metal nano-particles as set forth in claim 3, wherein the amine is an aliphatic amine having a linear or branched structure.
- 20 7. The metal nano-particles as set forth in claim 6, wherein the amine is at least one member selected from the group consisting of hexylamine, heptylamine, octylamine, decylamine, dodecylamine, 2-ethyl-hexylamine, 1,3-dimethyl-n-butylamine, 1-amino-undecane and 1-amino tridecane.
8. The metal nano-particles as set forth in any one of claims 1 to 7, wherein the particle size
25 of the metal nano-particle is not less than 1 nm and not more than 100 nm.
9. A method for the preparation of metal nano-particles comprising the steps of dissolving, in a non-polar solvent, an organic metal compound of a fatty acid as set forth in claim 4 or 5, a metal complex of an amine as set forth in claim 6 or 7 or a mixture of the organic metal compound and the metal complex, and adding a reducing agent to the resulting liquid in order to
30 reduce the liquid to thus give metal nano-particles.

10. The method for the preparation of metal nano-particles as set forth in claim 9, wherein the reducing treatment is carried out while additionally introducing, into the liquid, hydrogen gas, carbon monoxide gas, a hydrogen-containing gas or a carbon monoxide-containing gas.

11. The method for the preparation of metal nano-particles as set forth in claim 9 or 10,
5 wherein, after the completion of the reducing treatment, deionized water is added to the liquid, followed by stirring the resulting mixture and then allowing the mixture to stand so that impurities present in the liquid are transferred to a polar solvent and that the impurity concentration in the non-polar solvent is reduced.

12. The method for the preparation of metal nano-particles as set forth in any one of claims 9
10 to 11, wherein the size of the metal nano-particles is not less than 1 nm and not more than 100 nm.

13. A metal nano-particle-containing dispersion characterized in that the dispersion is obtained by concentrating the dispersion containing the metal nano-particles prepared according to the method as set forth in any one of claims 9 to 12 and then re-dispersing the metal
15 nano-particle, to thus control a concentration thereof to a level of not less than 5% by mass and not more than 90% by mass.

14. The metal nano-particle-containing dispersion as set forth in claim 13, wherein the size of the metal nano-particles is not less than 1 nm and not more than 100 nm.

15. A method for the preparation of a metal nano-particle-containing dispersion comprising
20 the steps of concentrating the dispersion containing metal nano-particles prepared according to the method as set forth in any one of claims 9 to 12 and then again dispersing the metal nano-particles to thus give a dispersion of metal nano-particle having a metal nano-particle concentration of not less than 5% by mass and not more than 90% by mass.

16. The method for the preparation of a metal nano-particle-containing dispersion as set forth
25 in claim 15, wherein the size of the metal nano-particles is not less than 1 nm and not more than 100 nm.

17. A method for the preparation of a thin metallic wire or a metal film comprising the steps of coating, onto the surface of a base material, a dispersion containing metal nano-particle as set forth in any one of claims 1 to 8, a dispersion containing metal nano-particles prepared
30 according to the preparation method as set forth in any one of claims 9 to 12, the dispersion as

set forth in claim 13 or 14 or the metal nano-particle-containing dispersion prepared according to the preparation method as set forth in claim 15 or 16, followed by drying and then firing the coated layer of the dispersion to thus form a thin metallic wire or a metal film having conductivity.

- 5 18. The method for the preparation of a thin metallic wire or a metal film as set forth in claim 17, wherein the temperature of the firing step ranges from 140 to 300°C.
19. A thin metallic wire prepared according to the method as set forth in claim 17 or 18.
20. A metal film prepared according to the method as set forth in claim 17 or 18.